

**A**udit



**R**eport

YEAR 2000 END-TO-END TESTING:  
LOGISTICS CAPSTONE PLAN

Report No. 00-002

October 1, 1999

Office of the Inspector General  
Department of Defense

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### **Acronyms**

DLA	Defense Logistics Agency
DUSD(L)	Deputy Under Secretary of Defense (Logistics)
IAWG	Interface Assessment Working Group
LCOP	Logistics Continuity of Operations Plan
PSA	Principal Staff Assistant
Y2K	Year 2000



INSPECTOR GENERAL  
DEPARTMENT OF DEFENSE  
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October 1, 1999

MEMORANDUM FOR DEPUTY UNDER SECRETARY OF DEFENSE  
(LOGISTICS)  
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL  
MANAGEMENT AND COMPTROLLER)  
DIRECTOR, DEFENSE LOGISTICS AGENCY  
AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Audit Report on Year 2000 End-to-End Testing: Logistics Capstone Plan  
(Report No. 00-002)

We are providing this report for review and comment. This report is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the DoD Chief Information Officer to identify progress made by DoD Components that are preparing information and technology systems for year 2000 compliance. We considered management comments on a draft of this report in preparing the final report.

DoD Directive 7650.3 requires that all recommendations be resolved promptly, and there is special urgency regarding year 2000 conversion issues. We did not receive comments from the Chief Information Officers for the Army and the Navy. Comments from the Deputy Under Secretary of Defense (Logistics) and the Defense Logistics Agency were responsive. We request that the Chief Information Officers for the Army and the Navy provide comments on Recommendation 2. by October 18, 1999.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Tilghman Schraden at (703) 604-9186 (DSN 664-9186) (tschraden@dodig.osd.mil) or Ms. Kathryn Palmer at (703) 604-8840 (DSN 664-8840) (kpalmer@dodig.osd.mil). See Appendix C for the report distribution. The audit team members are listed inside the back cover.

A handwritten signature in black ink that reads "Robert J. Lieberman".

Robert J. Lieberman  
Assistant Inspector General  
for Auditing

## Office of the Inspector General, DoD

Report No. 00-002  
(Project No. 9LD-9024)

October 1, 1999

### Year 2000 End-to-End Testing: Logistics Capstone Plan

#### Executive Summary

**Introduction.** This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the year 2000 computing challenge. For a complete listing of audit projects addressing the issue, see the year 2000 web pages on the IGnet at <http://www.ignet.gov>.

The DoD Year 2000 Management Plan (DoD Management Plan), Appendix I, assigns responsibility to the Principal Staff Assistants for “ensuring the end-to-end functional process flows that support their functional area are assessed either in a JS/CINC [Joint Staff/Commander in Chief] Y2K [Year 2000] Op Eval [Operational Evaluation], a Service-sponsored System Integration Test, or through a Functional-Area Y2K End-to-End Test.” Appendix I also states that the Principal Staff Assistant responsibilities include “planning, executing, and evaluating all mission-critical systems not otherwise tested and for ensuring that processes that fall within their purview are evaluated.” The Deputy Under Secretary of Defense (Logistics) (DUSD[L]) acts on behalf of the Under Secretary of Defense for Acquisition and Technology, the Principal Staff Assistant for logistics, in performing those functions for the logistics functional area.

Logistics functional end-to-end testing was divided into three phases. The first was Level I, intra-Component testing, and the second was Level II, inter-Component testing. Level III testing was to be conducted as required to perform retesting. The DUSD(L) provided oversight for Level II testing while delegating responsibility for execution of the Level I testing to the Components. Level II testing began on May 25, 1999, and was completed on July 14, 1999. In a working draft report, “Logistics Year 2000 End-to-End Level II Exercise Evaluation Report,” September 1999, the Joint Interoperability Test Command concluded that the mission-critical logistics processes will continue unaffected by year 2000-related issues and that the logistics automated information systems will operate as a whole to support the five mission-critical logistics processes included in Level II testing. DUSD(L) representatives stated that Level III testing would not be required because of the successful demonstration of year 2000 capabilities by the logistics systems participating in the test of the five mission-critical logistics processes.

**Objectives.** The audit objective was to evaluate the effectiveness of the year 2000 end-to-end tests planned for the logistics functional area. This report, the first in a series on logistics end-to-end testing, focuses on the overall end-to-end test planning accomplished by the DUSD(L). Subsequent reports will address Component test planning and test results.

**Results.** The end-to-end test planning for the inter-Component mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan. In response to the practical limitations imposed by resource constraints and calendar time

remaining, the DUSD(L), in conjunction with the Logistics Year 2000 Interface Assessment Working Group, prioritized the logistics processes and data flows that were included in testing based on their criticality to the warfighter. Out of 15 core logistics processes, 5 were identified as critical. The testing of logistics systems supporting the 5 mission-critical processes was limited to 37<sup>1</sup> mission-critical systems out of the 149<sup>2</sup> listed in the DoD Year 2000 Reporting Database. However, the DUSD(L) did not formally document the risk assessment process that was required to be conducted as part of identifying and prioritizing the core logistics processes. Additionally, the DUSD(L) did not systematically monitor the content of the commander in chief operational evaluations or Service integration tests to ensure that any systems or processes not covered were identified and included in the logistics functional end-to-end tests. Although the DUSD(L) proposed an additional risk mitigation step, the Chief Information Officers of the Components, except for the Air Force, had not agreed to perform the verification and validation of 100 percent of mission-critical code. As a result, more needs to be done to enable the DUSD(L) to perform an overall assessment of the logistics functional area's year 2000 readiness and the Chief Information Officers of the Components need to support the DUSD(L) efforts to ensure that critical logistics systems will operate in a year 2000 environment. See the Finding section for details.

**Summary of Recommendations.** We recommend that the DUSD(L) develop a risk management plan that includes a risk assessment and mitigation plan for all logistics processes and their mission-critical systems, with emphasis on risks associated with the selection of the five mission-critical processes. We also recommend that the Chief Information Officers of the Army, the Navy, and the Defense Logistics Agency (DLA) implement the DUSD(L) requirement to perform an independent verification and validation of 100 percent of the software code that impacts the mission-critical logistics processes.

**Management Comments.** The DUSD(L) concurred, stating that a risk assessment had not been completed. Mitigation actions that result from the assessment will be worked within the Logistics Year 2000 Interface Assessment Working Group. Although not required to respond, the DUSD(L) also agreed with the recommendation for the Army, the Navy, and DLA to perform code scanning, stating that all mission-critical logistics software should be reviewed using advanced automated tools. The Army and the Navy did not provide comments on that recommendation. DLA partially concurred, stating that it had undertaken a code scanning program for its mission-critical logistics systems and had put budgetary and administrative provisions in place to scan its mission-critical systems. A discussion of management comments is in the Finding section of the report, and the complete text is in the Management Comments section.

**Audit Response.** DUSD(L) and DLA comments were responsive. We request that the Army and the Navy provide comments on the final report by October 18, 1999.

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<sup>1</sup>According to information provided by the participating Components since the issuance of the draft report, a total of 31 mission-critical logistics systems were tested during Level II testing.

<sup>2</sup>Since the issuance of the draft report, the Air Force dropped a total of 3 systems from the DoD Year 2000 Reporting Database and DLA changed the functional area code of 1 mission-critical system from environmental security to logistics, which resulted in a new total of 147 mission-critical logistics systems as of September 22, 1999.

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## Background

**Executive Order.** Because of the potential failure of computers to function throughout the Government, the President issued Executive Order 13073, "Year 2000 Conversion," February 4, 1998, making it policy that Federal agencies ensure that no critical Federal program experiences disruption because of the year 2000 (Y2K) problem. The order requires that the head of each agency ensure that efforts to address the Y2K problem receive the highest priority attention in the agency.

**Public Law.** Public Law 105-261, "National Defense Authorization Act for Fiscal Year 1999," October 17, 1998, Section 334(b), directs that the Secretary of Defense ensure that "all mission-critical systems that are expected to be used if the Armed Forces are involved in a conflict in a major theater of war are tested in at least two exercises." In addition, Section 334(d) states: "Alternative Testing Method. In the case of an information technology or national security system for which a simulated year 2000 test as part of a military exercise described in subsection (c) is not feasible or presents undue risk, the Secretary of Defense shall test the system using a functional end-to-end test or through a Defense Major Range and Test Facility Base."

**DoD Year 2000 Management Strategy.** In his role as the DoD Chief Information Officer, the Senior Civilian Official, Office of the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), issued the "DoD Year 2000 Management Plan, Version 2.0" (DoD Management Plan) in December 1998. The DoD Management Plan required DoD Components to implement a five-phase (awareness, assessment, renovation, validation, and implementation) Y2K management process to be completed by December 31, 1998, for mission-critical systems.

The DoD Management Plan also provides guidance for implementing the Deputy Secretary of Defense memorandum, "Year 2000 (Y2K) Verification of National Security Capabilities," August 24, 1998, that requires that each Principal Staff Assistant (PSA) of the Office of the Secretary of Defense "verify that all functions under his or her purview will continue unaffected by Y2K issues." That verification was to be performed after completion of the five-phase management approach that culminated with completion of the implementation phase, December 31, 1998. That further testing, to be conducted during the first half of 1999, was planned and conducted from a mission perspective rather than a system perspective and would increase the confidence that any errors or omissions in system remediation would be found.

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## Objectives

The audit objective was to evaluate the effectiveness of the Y2K end-to-end tests planned for the logistics functional area. This report, the first in a series on logistics end-to-end testing, focuses on the overall end-to-end test planning accomplished by the Deputy Under Secretary of Defense (Logistics) (DUSD[L]). Subsequent reports will address Component test planning and test results. See Appendix A for a discussion of the audit scope and methodology and a summary of prior coverage.

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## Planning for Logistics Functional End-to-End Testing

The end-to-end test planning for the inter-Component mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan. In response to the practical limitations imposed by resource constraints and calendar time remaining, the DUSD(L), in conjunction with the Logistics Y2K Interface Assessment Working Group, prioritized the logistics processes and data flows that were included in testing based on their criticality to the warfighter. Out of 15 core logistics processes, 5 were identified as critical. The inter-Component testing of logistics systems supporting the 5 mission-critical processes was limited to 37<sup>1</sup> mission-critical systems out of the 149<sup>2</sup> listed in the DoD Y2K Reporting Database. However, the DUSD(L) did not formally document the risk assessment process that was required to be conducted as part of identifying and prioritizing the core logistics processes. Additionally, the DUSD(L) did not systematically monitor the content of the commander in chief operational evaluations or Service integration tests to ensure that any systems or processes not covered were identified and included in the logistics functional end-to-end tests. Although the DUSD(L) proposed an additional risk mitigation step, the Chief Information Officers of the Components, except for the Air Force, had not agreed to perform the verification and validation of 100 percent of mission-critical code. As a result, more needs to be done to enable the DUSD(L) to perform an overall assessment of the logistics functional area's Y2K readiness and the Chief Information Officers of the Components need to support the DUSD(L) efforts to ensure that critical logistics systems will operate in a Y2K environment.

### DoD Guidance

The DoD Management Plan, Appendix I, assigns responsibility to the PSAs for 'ensuring the end-to-end functional process flows that support their functional area are assessed either in a JS/CINC [Joint Staff/Commander in Chief] Y2K Op Eval [Operational Evaluation], a Service-sponsored System Integration Test, or through a Functional-Area Y2K End-to-End Test." Appendix I also states

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<sup>1</sup>According to information provided by the participating Components since the issuance of the draft report, a total of 31 mission-critical logistics systems were tested during Level II testing. The count used in this report was based on planning documents showing the testing of five Navy systems that were not actually included during Level II, and the inclusion of one Air Force communications system on the list of logistics systems.

<sup>2</sup>Since the issuance of the draft report, the Air Force dropped a total of 3 systems from the DoD Y2K Reporting Database and the Defense Logistics Agency changed the functional area code of 1 mission-critical system from environmental security to logistics, which resulted in a total of 147 mission-critical logistics systems as of September 22, 1999.

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that the PSAs' responsibilities include "planning, executing, and evaluating all mission-critical systems not otherwise tested and for ensuring that processes that fall within their purview are evaluated." The DUSD(L) acts on behalf of the PSA for logistics<sup>3</sup> in performing those functions for the logistics functional area. This report refers to actions taken by the DUSD(L) in that role.

## End-to-End Test Planning

The DUSD(L) implemented and executed key components of the DoD Management Plan in his efforts to adequately plan for and manage logistics functional end-to-end testing. Test planning was accomplished through the "Logistics Capstone Operational Assessment Plan for Year 2000" (Logistics Capstone Plan), dated October 30, 1998.<sup>4</sup> The Logistics Capstone Plan provided the overall strategy for conduct of the logistics end-to-end testing and was coordinated with the Services, the Defense Logistics Agency (DLA), the Joint Interoperability Test Command, and the Joint Staff. The October 1998 Logistics Capstone Plan was updated in February 1999 and again in May 1999 to reflect evolving schedules and processes. Its name was changed to "Logistics Capstone Plan for Year 2000 End-to-End Test" as part of the February update. In this report, unless otherwise noted, Logistics Capstone Plan refers to the May 20, 1999, version. For a summary of the Logistics Capstone Plan, see Appendix B.

The overall strategy presented in the Logistics Capstone Plan was augmented with Component plans from the Army, the Navy, the Air Force, the Marine Corps, and DLA. Those Component plans were included as appendixes to the Logistics Capstone Plan. (The planning accomplished by the Components will be addressed in separate reports.) Detailed planning necessary to execute the testing called for in the Logistics Capstone Plan was accomplished by an exercise directive and event plans. The key components of the logistics end-to-end test strategy are as follows.

**Test Approach.** The Logistics Capstone Plan defines three levels of testing and delegates responsibility for each. The multilevel test approach consisted of intra-Component events (Level I), inter-Component events (Level II), and post-test activities that include retest (Level III). Level I test events were designed to ensure processes and systems within a Component's organizational boundaries are Y2K ready. Level II testing was to verify mission-critical processes and information flows that involve more than a single Component are Y2K ready. The execution and oversight of the Level I testing was delegated to the Components while DUSD(L) focused on Level II testing and post-test events, such as retest, during Level III. The DUSD(L) required that the Components obtain an independent verification and validation of Level I testing. Independent

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<sup>3</sup>The Under Secretary of Defense for Acquisition and Technology is the PSA for logistics.

<sup>4</sup>The October 30, 1998, Logistics Capstone Plan was approved by the Deputy Secretary of Defense in November 1998.

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verification and validation of Level II testing was achieved through the use of the Joint Interoperability Test Command for test planning, execution, and reporting.

**Core Processes.** In conjunction with the Logistics Y2K Interface Assessment Working Group<sup>5</sup> (Logistics IAWG), the DUSD(L) identified 8 out of 15 core supply and materiel management processes as mission-critical. The Logistics Capstone Plan defines those mission-critical processes as being “so dependent on automation, that within hours or days of an automation system being needed and not available, a warfighting mission is impaired.” DUSD(L) representatives explained that, as a general rule, the time period was set at 72 hours. Those 15 core processes, including the 8 processes considered to be mission-critical, were listed in Appendix B of the October 1998 Logistics Capstone Plan and are shown in the following table. Those eight mission-critical processes were further evaluated by the Logistics IAWG with the result that five mission-critical logistics processes were determined to be required to support the warfighter. Those five processes were included in Level II testing. The following table lists the core logistics processes, showing which were determined to be mission-critical and which were determined to be required to support the warfighter.

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<sup>5</sup>The Logistics IAWG membership was composed of DoD Component representatives and was chaired by the Director, Logistics Systems Modernization.

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## Mission Criticality of Core Logistics Processes

<u>Logistics Process</u>	<u>Mission Critical</u>	<u>Required by Warfighter</u>
MILSTRIP <sup>1</sup> Requisition Cycle	Yes	Yes
MILSTRIP Foreign Military Sales Requisition Cycle	Yes	No
MILSTRIP Lateral Distribution Process	Yes	No
MILSTRIP Materiel Returns Program	No	No
MILSTRIP Materiel Obligation Validation Cycle	No	No
MILSTRAP <sup>2</sup> Receipt Processing	Yes	Yes
MILSTRAP Physical Inventory Control Program	Yes	Yes
MILSTRAP Logistics Reassignment Process	No	No
MILSTRAP Asset Status Reporting	Yes	Yes
MILSTRAP Small Arms Serial Number Registration and Reporting	No	No
MILSTRAP Special Program Requirements, Logistics Asset Support Estimate, and War Materiel Requirements Reporting	Yes	No
MILSTAMP <sup>3</sup> Shipment Process	Yes	Yes
MILSTAMP Transportation Billing Process	No	No
MILSCAP <sup>4</sup> Contract Administration Process	No	No
MILSBILLS <sup>5</sup> Billing, Interfund Reimbursement, and Adjustment Process	No	No

<sup>1</sup>Military Standard Requisitioning and Issue Procedures.

<sup>2</sup>Military Standard Transactions Reporting and Accounting Procedures.

<sup>3</sup>Military Standard Transportation and Movement Procedures.

<sup>4</sup>Military Standard Contract Administration Procedures.

<sup>5</sup>Military Standard Billing System.

**Systems Supporting Warfighters.** Thirty-seven mission-critical logistics systems were to be included in the Level II logistics end-to-end testing. Those systems were identified for inclusion in the testing because they provided critical functionality required to accomplish a portion of one of the five mission-critical logistics processes. The 37 logistics systems were composed of 8 Army systems; 12 Navy systems; 5 Air Force systems; 6 Marine Corps systems; and 6 DLA systems.<sup>6</sup> A total of 149 logistics systems were identified as

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<sup>6</sup>The count of Navy systems actually included in Level II testing changed from 12 to 7 as a result of verification of the Navy data on mission-critical systems. The count of Air Force systems tested included four logistics systems and one communications system.

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mission-critical in the DoD Y2K Reporting Database. The DoD Y2K Reporting Database, maintained by the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence), provides a listing of DoD mission-critical systems and their Y2K status.

**Maintenance and Transportation.** Maintenance and transportation functions will be included in the DUSD(L) overall assessment of the logistics functional area's Y2K readiness although processes from the maintenance and transportation functions were not included in the logistics end-to-end testing. Maintenance and transportation were acknowledged as core logistics processes in the October 1998 and May 1999 versions of the Logistics Capstone Plan. The Logistics Capstone Plan states that "it is assumed that cross-Component mission critical interfaces between maintenance activities are generally made through supply channels." As a result, the Logistics Capstone Plan delegated the testing of maintenance end-to-end process flows to the Components and did not further define maintenance processes. The Logistics Capstone Plan delegated the testing of transportation end-to-end process flows to the U.S. Transportation Command and the Services.

Although the Commander in Chief, U.S. Transportation Command, was responsible for testing the key end-to-end strategic transportation process flows during operational evaluations planned with the U.S. Central Command, strategic transportation processes were described in some detail in the Logistics Capstone Plan. Those strategic processes included:

- determining transportation infrastructure and processes;
- conducting deployment and redeployment;
- coordinating global strategic fueling;
- providing global patient movement aeromedical evacuation;
- disseminating and integrating national and strategic intelligence in support of the Defense Transportation System; and
- providing strategic direction and integration in support of the Defense Transportation System.

The responsibility for testing end-to-end Service-unique and theater-assigned transportation process flows was assigned to the Services. Processes to be included were:

- determining transportation requirements;
- providing and sustaining transportation operations; and
- exercising command and control of transportation operations.

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Results from the operational evaluations were reported to the DUSD(L) through the Chairman, Joint Chiefs of Staff, reporting chain. In preparing the overall assessment of logistics Y2K readiness, the DUSD(L) was to reflect the results of those operational evaluations.

**Test Limitations.** The Logistics Capstone Plan acknowledged the practical limitations of resource constraints and calendar time remaining for planning the functional end-to-end testing. The prioritization scheme for determining which processes and systems were to be tested was based on the application of the definition of mission-critical developed by the DUSD(L) and the Logistics IAWG. Additional limitations that impacted the robustness of testing included the following areas.

**Processes and System Interactions.** All logistics processes and mission-critical system interactions could not be tested within the calendar time available. Thin lines of systems, the minimum essential automated information required to support the mission-critical processes, were selected by the Logistics IAWG.

**Information Flows.** All information flows within the thin lines of systems could not be tested. The Logistics IAWG selected supply transactions for electronics items represented by 176 national stock numbers for the Level II end-to-end testing.

**Commodities.** Not all DLA commodity groups could be tested because of limited calendar time and availability of test environments. Specifically, out of six DLA commodity groups managed by the Standard Automated Materiel Management System, one (electronics) was included in the inter-Component Level II testing. Commodities not included in the testing were clothing and textiles, construction, industrial, medical, and general supplies.

**Date Crossings.** Level II testing included date crossings for fiscal year 2000, calendar year 2000, and February 29, 2000. Fiscal year and calendar year 2001 were not included.

**Test Environment.** The test environment was not the same as the production environment<sup>7</sup> for all systems included in the testing because of limitations on the availability of test environments.

**Operational Mode.** The operational tempo simulated during testing was not representative of the transaction load on the participating systems or their supporting infrastructure that could be expected during a major theater war; other military action, such as a peacekeeping mission; or day-to-day transactions during peacetime.

**Contingency Plans.** Contingency plans for all mission-critical systems participating in the logistics end-to-end testing were not exercised by June 30, 1999, as required by the DoD Management Plan. The DoD Management Plan,

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<sup>7</sup>A production environment is the environment in which a software application operates on a day-to-day basis.

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Appendix H, requires two types of contingency plans that address potential Y2K disruptions: system and operational. The system contingency plan<sup>8</sup> is to focus on procedures necessary to restore a system if disruptions occur. The operational contingency plan is to detail the procedures by which the mission or functions supported by a system will be continued during any disruption. System contingency plans were to have been developed by December 30, 1998, in support of the system Y2K certification that was required by December 31, 1998. Operational contingency plans were to have been completed by March 31, 1999. Both types of plans were to have been exercised by June 30, 1999.

The Logistics Capstone Plan provides guidance on three types of contingency plans. The titles of those plans do not match the terminology used in the DoD Management Plan. The three types of plans were contingency plans; site and system continuity of operations plans; and logistics continuity of operations plans. The Logistics Capstone Plan requires that "all thin-line systems supporting the identified mission critical functions must have an effective contingency plan." Although the DoD Management Plan established a target completion date of June 30, 1999, for completion of testing of both system and operational plans, the Logistics Capstone Plan set a target date of September 1, 1999, for testing the individual contingency plans. According to DUSD(L) representatives, the Services did not meet the DoD Management Plan milestone of June 30, 1999, for exercising system and operational contingency plans for those mission-critical systems involved in the end-to-end tests. However, the contingency plans were expected to be exercised by the September 1, 1999, date listed in the Logistics Capstone Plan. As of September 22, 1999, the system and operational contingency plans for all the mission-critical systems had not been exercised.

In addition, the Logistics Capstone Plan tasks Components to conduct an analysis of the impact on mission-critical processes of the failure of information systems or the disruption of infrastructure services, such as electric power and telecommunications, and to document that analysis in system continuity of operations plans. The Logistics Capstone Plan required Components to submit continuity of operations plans for review by June 15, 1999, or to be prepared to exercise them before December 1, 1999. The Logistics Capstone Plan also addresses the Logistics Continuity of Operations Plan (LCOP), which focuses on identifying and managing Y2K risks to core missions and operations. The Logistics Capstone Plan calls for the LCOP to be developed by the DUSD(L) by September 15, 1999.

**Risk Assessments.** The DUSD(L) did not document the risk assessment performed during the process of prioritizing logistics processes for inclusion in end-to-end testing as required by the DoD Management Plan. The DoD Management Plan states that the Y2K event master planning sessions were to identify and prioritize core processes and perform risk assessments. The Logistics Capstone Plan contains a section on corporate-level risks. The Logistics Capstone Plan states that "Corporate Level risks fall into four general

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<sup>8</sup>The requirement for a system contingency plan may be met by existing contingency plans or disaster recovery plans if those plans have been updated to include Y2K disruptions.

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categories—Scope [of testing], Test environment, Schedule and Cost.” The Logistics Capstone Plan also assigns those categories a risk rating of high, medium, or low, based on probability of occurrence and consequences of occurrence, and lists the mitigation for a particular risk. The Logistics Capstone Plan states that the discussion of corporate-level risks is an initial risk assessment. In addition, the Logistics Capstone Plan states that a complete risk mitigation plan will be incorporated in the risk management plan. DUSD(L) representatives indicated that a risk management plan had not been completed as of July 8, 1999, but that the DUSD(L) planned to complete an overall risk management plan in the September 1999 time frame. As of September 22, 1999, the risk management plan had not been completed. However, the DUSD(L) had reconvened the Logistics IAWG for the purpose of working on the risk management plan, and it is expected to be completed in early November 1999. The DoD Management Plan does not have a date for completion of risk assessments. The risk management plan will incorporate any risks identified during the end-to-end testing, as well as any risks identified as a result of exercising the remaining contingency plans.

In addition, the DoD Management Plan requires that “risk assessment must be performed as part of the selection of appropriate systems for inclusion in the [test] event.” However, the DUSD(L) could not provide formal documentation for the risk assessment process that resulted in the initial selection of eight core logistics processes as mission-critical or the further refinement of that assessment that resulted in the final selection of five core logistics processes to be included in testing. The Logistics Capstone Plan states that the critical processes and systems to be included in testing were selected based on the application of the principle of immediate degradation of warfighting capabilities that was described earlier in this report (in the core processes paragraph). In addition, the DUSD(L) did not have documentation that addressed risks or the mitigation of risks associated with the logistics missions performed by the 10 core logistics processes that were not included in the functional end-to-end testing. Further, there was no risk assessment documentation addressing increased risk from the Services’ delay in completing required exercising of system and operational contingency plans. We believe that any risk management plan for the logistics functional area must contain an assessment and mitigation strategy for those logistics processes that were excluded from end-to-end testing, as well as those that were included, in order to provide a level of confidence that all functions and missions will demonstrate operational readiness in the year 2000.

**Other Testing.** The DUSD(L) did not systematically monitor the content of the commander in chief operational evaluations, Service integration tests, or Level I logistics end-to-end testing. A primary responsibility delegated to the PSAs by the DoD Management Plan was to ensure that the end-to-end functional process flows that support their functional areas are assessed in commander in chief operational evaluations, Service integration testing, or functional end-to-end testing. Further, the PSA was responsible for identifying mission-critical systems and processes that were not covered by commander in chief operational evaluations or Service integration tests and ensuring that those systems and processes were included in functional end-to-end testing. As previously discussed, those transportation processes to be tested by the Commander in

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Chief, U.S. Transportation Command, and the Services are identified in the Logistics Capstone Plan with provisions for including the results of that testing in the DUSD(L) overall assessment of the Y2K readiness of the logistics functional area. However, logistics process flows and systems that were to be tested in a commander in chief operational evaluation or by the Components during Service integration testing were not identified in the planning or working-level Logistics IAWG documents. DUSD(L) representatives reported that the DUSD(L) was not tracking the content of the Service integration tests and did not have a complete list of systems or processes participating in Level I (intra-Component) testing. DUSD(L) personnel stated that visibility of the coverage of those tests was provided by Component participation in the Logistics IAWG. We believe that the lack of systematic monitoring of the content of commander in chief operational evaluations, Service integration testing, and Level I testing may result in unnecessary risk that the required end-to-end testing may not have been done for all critical logistics systems and processes.

**Additional Measure to Mitigate Risk.** The DUSD(L) proposed an additional risk mitigation step beyond the end-to-end testing of mission-critical logistics processes that should further ensure that critical logistics processes will function in the year 2000. In order to make an assessment of potential errors introduced as a result of Y2K renovation efforts, the DUSD(L) proposed that the Components take an additional risk mitigation step requiring verification of 100 percent of the software code for mission-critical systems. Specifically, Components would be required to provide a certification to the DUSD(L) that an independent verification and validation, using advanced automated tools, was conducted on 100 percent of the code that impacts mission-critical processes. The Air Force is to be commended for taking action to implement automated code scanning for all Air Force mission-critical systems, not just logistics systems. However, a DUSD(L) representative reported that at least one Chief Information Officer does not plan on complying with the DUSD(L) requirement. Because of the complexity of testing in the joint environment and the thin lines of functionality tested during the logistics end-to-end tests, we believe that the additional step to apply state-of-the-art Y2K renovation tools is necessary to gain further assurance that critical logistics processes will meet the needs of the warfighter in the year 2000 and beyond.

## Summary

The DUSD(L) generally met the requirements of the DoD Management Plan in his efforts to adequately plan and manage logistics functional end-to-end testing. The Logistics Capstone Plan and supplemental test documents with detailed test event plans were developed by the DUSD(L) in conjunction with the Logistics IAWG. Although responsible for all 15 core logistics processes identified by the Logistics Capstone Plan, the DUSD(L) acknowledged practical limitations in terms of time and resources to the number of processes and supporting systems that could be included in testing. Only 5 of the core logistics processes and select information flows within 37 logistics systems were determined to be mission-critical and were scheduled to be included in Level II inter-Component tests. However, the DUSD(L) did not formally document the risk assessment

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process that supported the selection of mission-critical processes and their supporting systems and associated thin lines of information flows. In addition, the DUSD(L) did not have formal documentation of the process used to identify any mission-critical systems or processes that were not tested in commander in chief operational evaluations or Service integration testing. The DoD Management Plan required that any systems or processes that were left out of the commander in chief operational assessments or Service integration testing were to be addressed in the functional end-to-end testing. Considering the depth and breadth of test coverage, we believe that a risk management plan should be developed by the DUSD(L) that includes risk assessments and mitigation plans that cover those processes not included in the functional end-to-end testing. To further mitigate risk, we believe that the Components should implement the DUSD(L) proposal requiring a 100 percent scan of the software code for mission-critical logistics systems.

## Test Status

The DUSD(L) and the participating Components are to be commended for their accomplishment in developing test plans required to ensure the execution of inter-Component testing of mission-critical logistics processes. Level II testing began on May 25, 1999, and was completed on July 14, 1999. In a working draft report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," September 1999, the Joint Interoperability Test Command concluded that the mission-critical logistics processes will continue unaffected by Y2K-related issues and that the logistics automated information systems will operate as a whole to support the five mission-critical logistics processes included in Level II testing. DUSD(L) representatives stated that Level III testing would not be required because of the successful demonstration of Y2K capabilities by the logistics systems participating in the test of the five mission-critical logistics processes.

## Management Comments on the Finding and Audit Response

**DUSD(L) Comments.** The DUSD(L) took exception to the statement in the report that DUSD(L) did not systematically monitor operational evaluations. The DUSD(L) stated that the DoD Management Plan would have DUSD(L) testing systems not picked up in the commander in chief operational evaluations or Service integration tests. The DUSD(L) further stated that the DoD Management Plan was inconsistent with Deputy Secretary of Defense guidance that clearly defined the scope for complete end-to-end testing of mission-critical processes. At a review with the General Accounting Office, the DUSD(L) and the General Accounting Office concluded that the scope of testing defined in that guidance was also consistent with the law. In addition, the DUSD(L) performed an extensive, systematic evaluation of the Commander in Chief, U.S. Transportation Command, operational evaluation to ensure complete coverage of the logistics mission.

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**Audit Response.** The DoD Management Plan implements Deputy Secretary of Defense guidance and provides criteria for DoD Components to use to ensure DoD functions will continue unaffected by Y2K problems. Therefore, we do not believe that the DoD Management Plan guidance is inconsistent with guidance provided by the Deputy Secretary of Defense or public law.

## **Recommendations, Management Comments, and Audit Response**

**1. We recommend that the Deputy Under Secretary of Defense (Logistics) develop a risk management plan that includes a risk assessment and mitigation plan for all core logistics processes and their mission-critical systems, with emphasis on risks associated with the selection of the five mission-critical processes.**

**DUSD(L) Comments.** The DUSD(L) concurred, stating that the risk assessment had not been completed, but the operational test coordinator who conducted the end-to-end test has been tasked to complete the assessment. Mitigation actions that result from the assessment will be worked within the Logistics IAWG. In addition, the DUSD(L) will emphasize the five warfighting-critical materiel management processes. The risk assessment will also cover the other logistics processes that are important to effective and efficient DoD operations.

**2. We recommend that the Chief Information Officers of the Army, the Navy, and the Defense Logistics Agency implement the Deputy Under Secretary of Defense (Logistics) requirement to perform an independent assessment of 100 percent of the system software code for mission-critical logistics systems.**

**DUSD(L) Comments.** Although not required to respond, the DUSD(L) agreed, stating that all mission-critical logistics software should be reviewed using advanced automated tools. Further, the DUSD(L) stated that he believes that the use of advanced automated tools is the only practical way the DoD Components can comply with the DUSD(L) policy that requires evaluation of 100 percent of mission-critical software.

**DLA Comments.** DLA partially concurred, stating that it had undertaken a code scanning program for its mission-critical logistics systems and had put budgetary and administrative provisions in place to scan its mission-critical systems. Further, DLA stated that it was employing a two-stage code scanning approach. Stage one was described as consisting of a representative sample scan of each mission-critical system's code to assess the likelihood of unremediated errors. DLA stated that stage two scanning (a 100 percent scan of a system's code) would only be invoked if results from the sample scan suggested strong likelihood of unremediated Y2K errors, if the results of the code scanning initiative uncovered a significant level of errors, or if the results suggested other inherent problems may reside in the system. In addition, DLA stated that it conducted a formal risk mitigation workshop on September 8-9, 1999. The

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participants included representatives of all DLA major commands, the DLA Y2K test director, senior technical advisory staff, and other subject matter experts. DLA stated that the objective of the meeting was to review and assess the status of its Y2K testing program and to develop a plan of action for the remainder of 1999.

**Audit Response.** We consider the DLA comments to be responsive. The Army and the Navy did not provide comments on the recommendation. We request that the Army and the Navy provide comments in response to the final report.

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## Appendix A. Audit Process

This is one in a series of reports being issued by the Inspector General, DoD, in accordance with an informal partnership with the Chief Information Officer, DoD, to monitor DoD efforts to address the Y2K computing challenge. For a listing of audit projects addressing this issue, see the Y2K web pages on the IGnet at <http://www.ignet.gov/>.

### Scope and Methodology

**Work Performed.** We reviewed and evaluated the Y2K test planning efforts for the logistics functional end-to-end testing. We evaluated the Y2K test planning efforts of the DUSD(L) and compared those efforts with the criteria contained in the DoD Management Plan. We obtained documentation that included the Logistics Capstone Plan (October 30, 1998; February 8, 1999; and May 20, 1999, versions); supplemental test planning documents, such as the exercise directive and Logistics IAWG minutes; and the after-action review briefing provided on July 20, 1999. In addition, we obtained and reviewed the working draft report, "Logistics Year 2000 End-to-End Level II Exercise Evaluation Report," September 1999. We interviewed personnel within the Office of the DUSD(L) and the Joint Interoperability Test Command.

**Limitations to Scope.** Our review was limited to the DUSD(L) test planning as set forth in the Logistics Capstone Plan and did not include the test planning accomplished by the Services and the DLA.

**DoD-Wide Corporate-Level Goals.** In response to the Government Performance and Results Act, DoD established 6 DoD-wide corporate-level performance objectives and 14 goals for meeting the objectives. This report pertains to achievement of the following objective and goal.

**Objective:** Prepare now for an uncertain future. **Goal:** Pursue a focused modernization effort that maintains U.S. qualitative superiority in key war fighting capabilities. (DoD-3)

**DoD Functional Area Reform Goals.** Most major DoD functional areas have also established performance improvement reform objectives and goals. This report pertains to achievement of the following objectives and goals in the Information Technology Management Functional Area.

- **Objective:** Become a mission partner. **Goal:** Serve mission information users as customers. (ITM-1.2)
- **Objective:** Provide services that satisfy customer information needs. **Goal:** Modernize and integrate Defense information infrastructure. (ITM-2.2)

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- **Objective:** Provide services that satisfy customer information needs.  
**Goal:** Upgrade technology base. (ITM-2.3)

**High-Risk Area.** In its identification of risk areas, the General Accounting Office has specifically designated risk in resolution of the Y2K problem as high. This report provides coverage of that problem and the overall Information Management and Technology high-risk area.

**Audit Type, Dates, and Standards.** We performed this program audit from April through July 1999 in accordance with auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD. We did not use any computer-processed data for this audit.

**Contacts During the Audit.** We visited or contacted individuals and organizations within DoD. Further details are available on request.

**Management Control Program.** We did not review the management control program related to the overall audit objective because DoD recognized the Y2K issue as a material management control weakness area in the FY 1998 Annual Statement of Assurance.

## Summary of Prior Coverage

The General Accounting Office and the Inspector General, DoD, have conducted multiple reviews related to Y2K issues. General Accounting Office reports can be accessed over the Internet at <http://www.gao.gov/>. Inspector General, DoD, reports can be accessed over the Internet at <http://www.dodig.osd.mil/>. The previous report most relevant to the subject matter of this report is listed below.

## General Accounting Office

General Accounting Office Report No. AIMD 99-172 (OSD Case No. 1823), "Defense Computers: Management Controls Are Critical to Effective Year 2000 Testing," June 30, 1999.

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## Appendix B. Summary of Logistics Capstone Plan

**Logistics End-to-End Master Plan.** The DUSD(L) met the November 1, 1998, milestone for development of a functional end-to-end test master plan as required by the DoD Management Plan. The Logistics Capstone Plan provided the overall strategy for conduct of the logistics end-to-end testing. In addition, the overall strategy presented in the Logistics Capstone Plan was augmented with more detailed planning in the form of an exercise directive and event plans. The October 1998 Logistics Capstone Plan was updated in February and May 1999 to reflect evolving schedules and processes. In keeping with the guidance provided in the DoD Management Plan, the Logistics Capstone Plan included the key elements discussed in the following paragraphs.

**Roles and Responsibilities.** The Logistics Capstone Plan spells out the Y2K roles and responsibilities for the Office of the Secretary of Defense as well as the Services and Defense agencies. Included in the list of organizations with Y2K responsibilities were the Under Secretary of Defense for Acquisition and Technology; the Assistant Secretary of Defense (Command, Control, Communications, and Intelligence); the DUSD(L); the Services; DLA; the U.S. Transportation Command; the Joint Interoperability Test Command; the Joint Staff; and the Logistics IAWG.

**Master Schedule.** A logistics end-to-end test master schedule is provided in the plan. That schedule was updated as the process of test planning was accomplished. It contained a timeline for accomplishment for each phase of end-to-end testing.

**Oversight and Reporting.** Management oversight and controls are discussed in the Logistics Capstone Plan with respect to the responsibilities of each Service and Defense agency in managing Y2K risks. For example, the Services are assigned responsibility to assess risks affecting both their portions of the end-to-end test and their specific systems tests, and they are responsible for reporting on risk management and mitigation efforts. Although reporting requirements are not addressed in a separate section of the Logistics Capstone Plan, reporting on end-to-end test results is addressed. Quick reaction reports are to be available 7 days after completion of a test event with a final report due 30 days after completion of the test.

**Configuration Control.** Configuration control is addressed in the Logistics Capstone Plan. Except for emergency changes necessitated by test failures, the baseline configuration of the systems was to be frozen. After emergency changes are made to the baseline configuration, the system must be recertified and the test run again. In addition, the Logistics Capstone Plan states, "To reduce the risk that the test environment may not exactly replicate the production environment, the Components will validate by 1 November [19]99 that they have either: successfully processed a single cycle on their

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production system\* with an actual date shift; or that they have conducted a configuration audit of all systems platforms to provide assurance that the target environment is identical in all Y2K-relevant respects to the test environment.”

**Contingency Plans.** The Logistics Capstone Plan requires that, at a minimum, all thin lines of systems supporting identified mission-critical processes have an effective contingency plan. In addition, the Logistics Capstone Plan states that the contingency plans must be developed, reviewed, and validated by operators, must be resourced, and must be tested. Components are tasked to conduct an analysis of the impact on mission-critical processes of information system failures or of disruptions of infrastructure services, such as electric power and telecommunications. Components were to submit continuity of operations plans for review by June 15, 1999. If that target date could not be met, then the continuity of operations plans were to be exercised before December 1, 1999. The Logistics Capstone Plan also addresses the LCOP, which focuses on identifying and managing Y2K risks to core mission operations. The LCOP was to be based on the individual system contingency and continuity of operations plans. It was to be developed by the DUSD(L) by September 15, 1999.

**Risk Analysis and Mitigation.** Corporate-level risks are identified in the Logistics Capstone Plan, along with an assessment of the probability of occurrence as well as the consequences of such an occurrence. Components are tasked to perform risk assessments for both their portions of the end-to-end testing as well as for the systems that are participating in the test. In addition, the Logistics Capstone Plan states those risk assessments are to be included in an overall risk management plan. The Logistics Capstone Plan does not give a date for completion of the risk management plan.

**Management Controls.** The ability to perform all mission-critical processes throughout the Y2K transition period is listed as the primary measure of effectiveness in the Logistics Capstone Plan. The Logistics Capstone Plan states, “For each of the mission critical processes, five factors need to be addressed—remediation status, schedule, test results, contingency plan status, and continuity of process.”

**Independent Verification.** The Logistics Capstone Plan requires that the Components use independent agents to verify the intra-Component testing conducted during Level I testing. The Joint Interoperability Test Command provided the independent verification for the Level II testing.

**Additional Test Planning.** Additional test planning that supplemented the Logistics Capstone Plan was accomplished in the form of the “Logistics End-to-End Year 2000 Level II Exercise Directive” (Exercise Directive),

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\*The production system refers to the software and hardware that perform the system functions on a day-to-day basis.

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May 21, 1999. The Exercise Directive provided execution, evaluation information, and instruction for the Level II end-to-end testing sponsored by the DUSD(L). Included in the Exercise Directive were appendixes addressing data management; data collection; data evaluation; exercise control; data authentication group operation; and a day-by-day event schedule.

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## **Appendix C. Report Distribution**

### **Office of the Secretary of Defense**

Under Secretary of Defense for Acquisition and Technology

Deputy Under Secretary of Defense (Logistics)

Director, Logistics System Modernization

Under Secretary of Defense (Comptroller)

Deputy Chief Financial Officer

Deputy Comptroller (Program/Budget)

Assistant Secretary of Defense (Command, Control, Communications, and Intelligence)

Deputy Chief Information Officer and Deputy Assistant Secretary of Defense (Chief

Information Officer Policy and Implementation)

Principal Director for Year 2000

### **Department of the Army**

Chief Information Officer, Army

Auditor General, Department of the Army

Inspector General, Department of the Army

### **Department of the Navy**

Assistant Secretary of the Navy (Financial Management and Comptroller)

Chief Information Officer, Navy

Auditor General, Department of the Navy

Inspector General, Department of the Navy

Inspector General, Marine Corps

Chief Information Officer, U.S. Marine Corps

### **Department of the Air Force**

Assistant Secretary of the Air Force (Financial Management and Comptroller)

Chief Information Officer, Air Force

Auditor General, Department of the Air Force

Inspector General, Department of the Air Force

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## **Other Defense Organizations**

Director, Defense Contract Audit Agency  
Chief Information Officer, Defense Contract Audit Agency  
Director, Defense Information Systems Agency  
Inspector General, Defense Information Systems Agency  
Chief Information Officer, Defense Information Systems Agency  
Director, Defense Logistics Agency  
Chief Information Officer, Defense Logistics Agency  
Director, National Security Agency  
Inspector General, National Security Agency  
Inspector General, Defense Intelligence Agency

## **Non-Defense Federal Organizations and Individuals**

Office of Management and Budget  
Office of Information and Regulatory Affairs  
National Security Division Special Projects Branch  
Federal Chief Information Officers Council  
General Accounting Office  
National Security and International Affairs Division  
Technical Information Center  
Director, Defense Information and Financial Management Systems, Accounting and Information Management Division  
Inspector General, General Services Administration

## **Congressional Committees and Subcommittees, Chairman and Ranking Minority Member**

Senate Committee on Appropriations  
Senate Subcommittee on Defense, Committee on Appropriations  
Senate Committee on Armed Services  
Senate Committee on Governmental Affairs  
Senate Special Committee on the Year 2000 Technology Problem  
House Committee on Appropriations  
House Subcommittee on Defense, Committee on Appropriations  
House Committee on Armed Services  
House Committee on Government Reform  
House Subcommittee on Government Management, Information, and Technology,  
Committee on Government Reform  
House Subcommittee on National Security, Veterans Affairs, and International Relations, Committee on Government Reform  
House Subcommittee on Technology, Committee on Science

# Deputy Under Secretary of Defense (Logistics) Comments



ACQUISITION AND  
TECHNOLOGY

## OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

SEP 22 1999

(L/LSM)

### MEMORANDUM FOR DOD INSPECTOR GENERAL

**SUBJECT:** Draft Audit Report on DUSD(L) Year 2000 (Y2K) End-to-End (E2E)  
Testing: Logistics Capstone Plan (Report No. 9LD-9024)

The subject audit recommended that the Deputy Under Secretary of Defense for Logistics (DUSD(L)) will: (1) develop a risk management and mitigation plan for all logistics processes and mission critical systems, and (2) the Chief Information Officers of the Army, Navy, and the Defense Logistics Agency implement the DUSD(L) requirement for independent verification and validation of 100 percent of the software code that impacts the mission critical logistics processes.

We concur with your recommendations. Regarding the first, the Logistics Capstone Plan calls for a risk assessment that is not yet completed. I have assigned the Operational Test Coordinator (OTC) (who conducted the end-to-end test) the task of completing the assessment. Mitigation actions that result from the assessment will be worked with the Logistics Interface Assessment Working Group, the same group who planned and executed our tests. As your report suggests, we will emphasize the five, warfighting-critical, materiel management processes. The risk assessment will also cover the other logistics processes that are important to effective and efficient DoD operations.

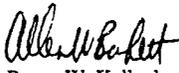
Regarding the second recommendation, we concur that all software on logistics mission critical threads should be reviewed using advanced automated tools. We believe that is the only practical way the Components can comply with our policy that requires evaluation of 100 percent of mission critical software. Manual assessment or renovation procedures, or applying first generation automated tools, cannot provide that assurance. Furthermore, while the end-to-end test was designed to exercise all mission critical logic paths against the most critical dates that should have been remediated, the test was not designed to show errors, related to other dates, which may have been introduced during renovation. An early finding of the Air Force when they applied advanced tools to a renovated logistics system was a window erroneously placed in February of 2000. Another benefit of these tools is their ability to identify Trojan horses and trap doors introduced during renovation.

The finding "The DUSD(L) did not systematically monitor the content of the Commander-in-Chief (CINC) operational evaluations" (page 10 and repeated in all summaries) also warrants comment. This finding is based on the DoD management plan which would have us testing the systems not picked up in CINC OPEVALS or Service



integration tests. The implication in the audit is inconsistent with DEPSECDEF guidance that clearly defined the scope for complete end-to-end testing of mission critical processes. At a review with GAO this month, we reviewed the law and are confident that our scope was entirely consistent with that as well. We performed an extensive, systematic evaluation of the CINC TRANSCOM OPEVALS (the only CINC who executes solely a logistics function) to ensure complete coverage of our mission. We recommend that all references to the monitoring of other tests should be deleted from the audit.

Lastly, I want to commend your staff for bringing their concerns to us in a timely manner. As important as the findings in this report, was your staff's contribution to our formulating policy by their active participation in our working groups. Your staff were true team members. Please direct any questions to my point of contact, Mr. John Nyere, DUSD(L/LSM), (703)692-6032, e-mail: nyereje@acq.osd.mil.

  
for Roger W. Kallock  
Deputy Under Secretary of Defense  
for Logistics

# Defense Logistics Agency Comments



IN REPLY  
REFER TO

DDAI

**DEFENSE LOGISTICS AGENCY**  
HEADQUARTERS  
8725 JOHN J. KINGMAN ROAD, SUITE 2533  
FT. BELVOIR, VIRGINIA 22060-6221



SEP 13 1999

MEMORANDUM FOR ASSISTANT INSPECTOR GENERAL FOR AUDITING  
DEPARTMENT OF DEFENSE

SUBJECT: Year 2000 End-to-End Testing: Logistics Capstone Plan, August 16, 1999,  
Project No. 9LD-9024

This responds to the overall finding and recommendations of subject report. DLA partially concurs with the DoD-IG recommendation to implement the Deputy Under Secretary of Defense (Logistics) requirement to perform an independent verification and validation of 100 percent of the software code that impacts the mission-critical logistics process. DLA has already undertaken a code-scanning program for its mission-critical logistics systems.

Attached are specific comments to the finding and recommendation contained in the report. The agency appreciates the opportunity to comment on the draft report.

E.R. CHAMBERLIN  
Rear Admiral, SC, USN  
Deputy Director

Attachment

SEP 13 1999

**SUBJECT: Year 2000 End-to-End Testing: Logistics Capstone Plan  
(Project No. 9LD-9024)**

**FINDING: Planning for Logistics Functional End-to-End Testing.** The end-to-end test planning for the inter-Component mission-critical logistics processes generally met the requirements outlined in the DoD Management Plan. In response to the practical limitations imposed by calendar time remaining, the DUSD(L) prioritized the logistics processes and data flows that were included in testing based on their criticality to the warfighter. Out of 15 core logistics processes, 5 were identified as critical. The inter-Component testing of logistics systems supporting the 5 mission-critical processes was limited to 37 mission-critical systems out of the 149 listed in the DoD Y2K Reporting Database. However, the DUSD(L) did not formally document the risk assessment process that was required to be conducted as part of identifying and prioritizing the core logistics processes. Additionally, the DUSD(L) did not systematically monitor the content of the commander in chief operational evaluations or Service integration tests to ensure that any systems or processes not covered were identified and included in the logistics functional end-to-end tests. Although the DUSD(L) proposed an additional risk mitigation step, the Chief Information Officers of all the Components, except for the Air Force, had not agreed to perform the verification and validation of 100 percent of mission-critical code. As a result, more needs to be done to enable the DUSD(L) to perform an overall assessment of the logistics functional area's Y2K readiness and the Chief Information Officers of the Components need to support the DUSD(L) efforts to ensure that critical logistics systems will operate in a Y2K environment.

**DLA COMMENTS:** Partially concur.

The Chief Information Officer supports the efforts of the DUSD (L) to perform verification and validation of the mission critical code and has already undertaken a code-scanning program for its mission critical logistics systems. DLA is in the process of completing time machine testing of its mission critical systems. Our strategy is also to scan as much of the code of its mission critical systems consistent with its budgetary and resource constraints.

**RECOMMENDATION 1:** Referred to DUSD (L) for comment.

**RECOMMENDATION 2:** We recommend that the Chief Information Officers of the Army, the Navy, and the Defense Logistics Agency implement the Deputy Under Secretary of Defense (Logistics) requirement to perform an independent assessment of 100 percent of the system software code for mission-critical logistics systems.

**DLA COMMENTS:** Partially concur.

DLA has already undertaken a code-scanning program for its mission-critical logistics systems. DLA has put budgetary and administrative provisions in place to scan its mission-critical systems. DLA believes it is more prudent to employ a two-stage code-scanning approach as follows:

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- a. Stage one consists of a representative sample-scan of each mission-critical system's code to assess the likelihood of significant Y2K-related errors remaining unremediated in that system. This sample-scan will consist of a minimum of 250,000 lines of code (LOC).
- b. Stage two scanning (100 percent of a system's code) would be invoked under either of two scenarios;
  - 1) if the results from the sample-scan for a system suggest a strong likelihood of unremediated Y2K errors remaining in the code, or
  - 2) if the overall results of DLA's code scanning initiative (both sample-scans and full system scans) have uncovered a significant level of errors or suggest other inherent problems may reside in the systems.

This two-stage approach has already been applied to the Defense Fuels Automated Management System (DFAMS), which had not yet undergone its scheduled time machine testing for full system functional-capability. A 250K LOC sample-scan turned up sufficient potential Y2K-related errors in the code to justify a 100 percent scan, which is now in process. Sample code scans are in process or scheduled for DISMS, DSS, MADS, MOCAS, and SAMMS.

In addition to its commitment to code scanning as a risk mitigation tactic, DLA conducted a formal risk mitigation workshop on September 8-9, 1999. The participants included representatives of all major DLA Commands, the DLA Y2K Test Director, senior technical advisory staff, and other subject matter experts. The objective of the meeting was to review and assess the status of DLA's Y2K testing program to-date, and to develop a plan of action for the remainder of 1999.

The workshop addressed those areas within DLA's overall mission-critical IT infrastructure where the most significant degree of continuity and/or mission fulfillment risk remains. DLA believes that this timing is optimal for effective risk mitigation. The Agency has had significant Y2K testing experience and is fully capable of making assessments of the relative strengths and weaknesses regarding the Y2K status of DLA's mission-critical systems. There is sufficient time remaining prior to 2000 to take whatever actions are deemed advisable to further ensure a smooth Y2K transition.

**DISPOSITION:** Action is Ongoing. ECD: October 30, 1999

**ACTION OFFICER:** Clarence McNeill, CI

**REVIEW/APPROVAL:** Carla A. von Bernewitz, Chief Information Officer

**COORDINATION:** Peggy Hayes, DDAI

## **Audit Team Members**

The Readiness and Logistics Support Directorate, Office of the Assistant Inspector General for Auditing, DoD, prepared this report. Personnel of the Office of the Inspector General, DoD, who contributed to the report are listed below.

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